UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,454	04/10/2001	Farshid Attarian	41PR-7785	4733

23413 7590 03/22/2004

CANTOR COLBURN, LLP
55 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

EXAMINER	
DONOVAN, LINCOLN D	

ART UNIT	PAPER NUMBER
2832	

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/681,454	ATTARIAN ET AL.	
	Examiner	Art Unit	
	Lincoln Donovan	2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-16 and 42-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-16 and 42-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 43-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant should clarify what "X" is intended to refer to.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9, 11 and 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al. [JP56-67915] in view of Morikawa et al. [JP 1-300506].

Regarding claims 9 and 11, Takeya et al. discloses a current sensor comprising:

- a c-shaped magnetic core [figure 3];
- at least one first layer of material [5] having a relatively high magnetic permeability;
- at least one second layer of material [6] having a relatively low magnetic permeability;
- an opening [figures 3-4] therethrough for accepting a current conductor; and

- a gap [10] formed within the core [figure 8].

Takeya et al. disclose the instant claimed invention except for a magnetic flux sensor being mounted within the gap and the first and second layers being formed of a plurality of layers.

Morikawa et al. discloses a laminated c-shaped core [figure 10] used with a current sensor having a hall-type magnetic field sensor [10] mounted in the gap.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to include a magnetic field sensor in the gap of Takeya et al., as suggested by Burns, for the purpose of detecting current imbalance.

Morikawa et al. further discloses the core being assembled of multiple layers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use laminations to form the core layers of Takeya et al., as suggested by Morikawa et al., for the purpose of facilitating assembly.

Regarding claims 42-45, the specific accuracy of the response would have been an obvious design consideration based on the specific sensitivity and operating environment.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al., as modified, as applied to claim 9 above, and further in view of Berkcan et al. [US 6,018,239].

Takeya et al. disclose the instant claimed invention except for a secondary winding being mounted on a bobbin about one of the legs of the core.

Berkcan et al. discloses a core [70] for a current sensor [figure 1] having windings [78] mounted on bobbins [72] mounted on the core legs.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use bobbins to mount windings for the core of Takeya et al., as modified, for the purpose of providing support for the windings on the leg and provide current sensing.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al., as modified, as applied to claim 9 above, and further in view of Burns [US 3,621,334].

Takeya et al., as modified, disclose the instant claimed invention except for the core profile being a figure 8 having spaced opposed gap faces in the central leg defining an air gap therebetween with the magnetic flux sensor being disposed therein.

Burns further discloses a core design having a figure 8 profile [figure 4] with spaced opposed gap faces in the central leg defining an air gap therebetween with the magnetic flux sensor [77] being disposed therein.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use the figure 8 profile for the core of Takeya et al., as modified, as suggested by Burns, for the purpose of canceling off stray magnetic fields and/or controlling sensitivity.

Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al., as modified, as applied to claim 9 above, and further in view of Smith [US 5,495,169].

Takeya et al., as modified, disclose the instant claimed invention except for the specific materials used for the core.

Smith discloses a core [16, 31] for a current sensor being formed of NiFe.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use NiFe for the core of Takeya et al., as suggested by Smith, for the purpose of providing good magnetic flux density.

Smith discloses that various nickel percentages can be used within the core structure to control the magnetic flux density and permeability [column 6, lines 17-38].

The specific percentage of nickel used in each of the core sections would have been an obvious design consideration based on the desired operating characteristics.

Response to Arguments

Applicant's arguments with respect to claims 9-16 and 42-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lincoln Donovan whose telephone number is (571) 272-1988. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ldd
3/2/04

LINCOLN DONOVAN
PRIMARY EXAMINER
GROUP 2100